

IN THE CLAIMS:

Claim 1. (Currently Amended): A configurable controller comprising:

 a synchronization control module;

 a plurality of configurable signal acquisition modules connected with said the synchronization control module;

 a control logic connected with said the plurality of configurable signal acquisition modules;

 a plurality of identical input cells respectively connected with said the plurality of configurable signal acquisition modules, each of said the plurality of identical input cells additionally further being connected with a respective input pin of said the configurable controller; and

 a synchronizing signal generator connected with said the synchronization control module and with said the plurality of identical input cells,

 wherein each one of said the plurality of identical input cells is operable to convert capable of converting input signal parameters to time-based parameters; and

 wherein each of said the configurable signal acquisition modules is configured to convert said the time-based parameters to a required digital form.

Claim 2. (Currently Amended): The configurable controller of claim 1,

 wherein each of said the plurality of identical input cells comprises a comparator, said the comparator adapted to receive an input signal from the respective input pin of the configurable controller, and

a synchronization signal from said the synchronizing signal generator, and to output a signal.

Claim 3. (Currently Amended): The configurable controller of claim 2, wherein said the synchronization signal has comprises a saw-teeth shape.

Claim 4. (Currently Amended): The configurable controller of claim 1, wherein said configurable controller additionally comprises further comprising:
a plurality of configurable output control logic modules connected with said the control logic, and said controller additionally comprising
a plurality of high-side output drivers and low-side output drivers connected with said the configurable output control logic modules,
said the plurality of high-side output drivers and low-side output drivers additionally further being connected with a plurality of output pins of said the configurable controller.

Claim 5. (Currently Amended): The configurable controller of claim 4, wherein
at least one of said the plurality of configurable output control logic modules is
connected to one pair of high-side output driver and low-side output driver from the plurality of
high-side output drivers and low-side output drivers, driver,
said the one pair of high-side output driver and low-side output driver being drivers
connected through respective output pins of said the configurable controller to one side of a
load, wherein

said the plurality of configurable output control logic module is configured to drive only one of said the high-side output driver and low-side output driver from the one pair of high-side output driver and low-side output driver, depending on said load's other a second side connection of the load.

Claim 6. (Currently Amended): The configurable controller of claim 4, wherein

at least one of said the plurality of configurable output control logic modules is connected to one of said the low-side drivers or to one of said the high-side drivers from the plurality of high-side output drivers and low-side output drivers,

said the one of the low-side drivers or the one of the high-side drivers driver being connected through a respective output pin of said the configurable controller to a load, wherein said the plurality of configurable output control logic module is configured to drive said the one of the low-side drivers or the one of the high-side drivers driver.

Claim 7. (Currently Amended): The configurable controller of claim 4,

wherein a first configurable output control logic module and a second configurable output control logic module ones of said configurable output control logic modules are connected respectively to one pair of high-side driver and low-side driver from the plurality of high-side output drivers and low-side output drivers,

said the one pair of high-side driver and said low-side driver being connected to two sides of a load through two respective output pins of said the configurable controller to two sides of a load,

wherein said the first configurable output control logic module and the second
configurable output control logic module modules are configured to control said the one pair of
high-side driver and low-side driver by two independent signal sources.

Claim 8. (Currently Amended): The configurable controller of claim 4,
wherein at least one of said the plurality configurable output control logic modules is
connected to two of said high-side drivers from the plurality of high-side output drivers and low-
side output drivers,
said the two high-side drivers being connected to one side of a load through respective
output pins of said the configurable controller to one side of a load,
wherein said the plurality of configurable output control logic modules modules is
configured to simultaneously control said the two high-side drivers.

Claim 9. (Currently Amended): The configurable controller of claim 4, wherein at least one of
said high-side drivers or low-side drivers from the plurality of high-side output drivers and low-
side output drivers is connected to one of said the input cells.

Claim 10. (Currently Amended): The configurable controller of claim 9, wherein said the input
cell is operable to measure capable of measuring the current of said the at least one of high-side
drivers or low-side driver drivers from the plurality of high-side output drivers and low-side
output drivers.

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Claim 11. (Currently Amended): The configurable controller of claim 10, wherein said the input cell is operable to detect capable of detecting connectivity of said the at least one of high-side drivers or low-side driver drivers from the plurality of high-side output drivers and low-side output drivers.

Claim 12. (Currently Amended): The configurable controller of claim 10, wherein said the input cell is operable to confirm capable of confirming switching of said the at least one of high-side drivers or low-side driver drivers from the plurality of high-side output drivers and low-side output drivers.

Claim 13. (Currently Amended): A method of acquiring a plurality of signals, comprising the steps of:

- (a) providing a synchronization control module;
- (b) configuring a plurality of configurable signal acquisition modules connected with said the synchronization control module;
- (c) providing a control logic connected with said the plurality of configurable signal acquisition modules;
- (d) providing a plurality of identical input cells respectively connected with said the plurality of configurable signal acquisition modules;
- (e) providing a synchronizing signal generator connected with said the synchronization control module and with said the plurality of identical input cells,
- (f) acquiring a plurality of input signals, each said the plurality of input signals being acquired by one of said the plurality of identical input cells;

(g) converting ~~said acquired signal parameters~~ the plurality of input signals into a plurality of time-based parameters; and

(h) converting ~~said~~ the plurality of time-based parameters into required digital forms.

Claim 14. (Currently Amended): The method of claim 13, wherein ~~said step (g) of converting said acquired signal parameters into a plurality of time-based parameters comprises the steps of:~~

(g1) receiving a synchronization signal from said the synchronizing signal generator; and

(g2) comparing said acquired the plurality of input signal with said the synchronization signal.

Claim 15. (Currently Amended): The method of claim 14, wherein ~~said the synchronization signal has comprises~~ a saw-teeth shape.

Claim 16. (Canceled).

Claim 17. (Currently Amended): A The configurable controller of claim 16 comprising:

a control logic;

a plurality of configurable output control logic modules connected with the control logic;

and

a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side output drivers and low-side output drivers further being connected with a plurality of output pins of the configurable controller,

wherein at least one of said the plurality of configurable output control logic modules is connected to one pair of high-side output driver and low-side output driver,

said the one pair of high-side output driver and low-side output driver being drivers connected to one side of a load through respective output pins of said the configurable controller to one side of a load, wherein

said the plurality of configurable output control logic module is configured to drive only one of said the one pair of high-side output driver and low-side output driver, depending on said load's other a second side connection of the load.

Claim 18 (Canceled).

Claim 19 (Currently Amended): A The configurable controller of claim 16 comprising:
a control logic;
a plurality of configurable output control logic modules connected with the control logic;
and
a plurality of high-side output drivers and low-side output drivers connected with the
plurality of configurable output control logic modules, the plurality of high-side output drivers
and low-side output drivers further being connected with a plurality of output pins of the
configurable controller,
wherein a first configurable output control logic module and a second configurable
output control logic module ~~ones of said configurable output control logic modules~~ are
connected respectively to one pair of high-side output driver and low-side output driver,

~~said the one pair of high-side output driver and said low-side output driver being connected to two sides of a load through two respective output pins of said the configurable controller to two sides of a load,~~

wherein ~~said the first configurable output control logic module and the second~~ configurable output control logic ~~module~~ ~~modules~~ are configured to control ~~said the one pair of~~ high-side ~~output~~ driver and low-side ~~output~~ driver by two independent signal sources.

Claim 20 (Currently Amended): ~~A~~ The configurable controller of claim 16 comprising:

a control logic;
a plurality of configurable output control logic modules connected with the control logic;
and
a plurality of high-side output drivers and low-side output drivers connected with the
plurality of configurable output control logic modules, the plurality of high-side output drivers
and low-side output drivers further being connected with a plurality of output pins of the
configurable controller,

wherein at least one of said the plurality of configurable output control logic modules is connected to two ~~of~~ high-side output drivers,

~~said the two high-side output drivers being connected to one side of a load through~~ respective output pins of ~~said the~~ configurable controller ~~to one side of a load,~~

wherein said the plurality of configurable output control logic module is configured to simultaneously control said the two high-side output drivers.

Claim 21. (Canceled):

Claim 22 (Currently Amended): A The method of claim 21 controlling a plurality of loads,
comprising the steps of:

- (a) providing a control logic;
- (b) providing a plurality of configurable output control logic modules connected with the control logic;
- (c) providing a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side output drivers and low-side output drivers further being connected with a plurality of output pins of the configurable controller; and
- (d) configuring each of the plurality of configurable output control logic modules to drive at least one of the plurality of high-side output drivers and low-side output drivers according to the connections between the plurality of loads and the plurality of high-side output drivers and low-side output drivers.

wherein at least one of said the plurality of configurable output control logic modules is connected to one pair of high-side output driver and low-side output driver,

said the one pair of high-side output driver and low-side output driver being drivers connected to one side of a load through respective output pins of said the configurable controller to one side of a load, wherein

said the plurality of configurable output control logic module is configured to drive only one of said the high-side output driver and low-side output driver, depending on said load's other a second side connection of the load.

Claim 23 (Canceled).

Claim 24 (Currently Amended): A ~~The method of claim 21~~ controlling a plurality of loads, comprising the steps of:

- (a) providing a control logic;
- (b) providing a plurality of configurable output control logic modules connected with the control logic;
- (c) providing a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side output drivers and low-side output drivers further being connected with a plurality of output pins of the configurable controller; and
- (d) configuring each of the plurality of configurable output control logic modules to drive at least one of the plurality of high-side output drivers and low-side output drivers according to the connections between the plurality of loads and the plurality of high-side output drivers and low-side output drivers,

wherein a first configurable output control logic module and a second configurable output control logic module ones of said configurable output control logic modules are connected respectively to one pair of high-side output driver and low-side output driver, said the one pair of high-side output driver and said low-side output driver being connected to two sides of a load through two respective output pins of said the configurable controller to two sides of a load,

wherein said the first configurable output control logic module and the second configurable output control logic module modules are configured to control said the one pair of high-side output driver and low-side output driver by two independent signal sources.

Claim 25 (Currently Amended): A The method of claim 21 controlling a plurality of loads,
comprising the steps of:

(a) providing a control logic;
(b) providing a plurality of configurable output control logic modules connected with the
control logic;
(c) providing a plurality of high-side output drivers and low-side output drivers
connected with the plurality of configurable output control logic modules, the plurality of high-
side output drivers and low-side output drivers further being connected with a plurality of output
pins of the configurable controller; and
(d) configuring each of the plurality of configurable output control logic modules to
drive at least one of the plurality of high-side output drivers and low-side output drivers
according to the connections between the plurality of loads and the plurality of high-side output
drivers and low-side output drivers.

wherein at least one of said the plurality of configurable output control logic modules is connected to two of said high-side output drivers,

said the two high-side output drivers being connected to one side of a load through
respective output pins of said the configurable controller to one side of a load,

wherein said the plurality of configurable output control logic module is configured to simultaneously control said the two high-side output drivers.

Claim 26. (New): A configurable controller for controlling a plurality of loads, comprising:

 a control logic;
 a plurality of configurable output control logic modules connected with the control logic;
and

 a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side and low-side output drivers further being connected with a plurality of output pins of the configurable controller,

 wherein each of the plurality of loads is connected to at least two of the output pins of the configurable controller and each of the output pins of the configurable controller is connected to a high-side output driver or a low-side output driver; and

 the plurality of configurable output control modules are adapted to control each of the plurality of loads according to

 a number of the output pins of the configurable controller connected to each of the plurality of loads,

 a number of the high-side output drivers connected to the output pins of the configurable controller, and

 a number of the low-side output drivers connected to the output pins of the configurable controller.

Claim 27. (New): The configurable controller of claim 26,

wherein at least one of the plurality of configurable output control logic modules is connected to one pair of high-side output driver and low-side output driver, the one pair of high-side output driver and low-side output driver being connected to one side of a load through respective output pins of the configurable controller, wherein the plurality of configurable output control logic module is configured to drive only one of the one pair of high-side output driver and low-side output driver, depending on a second side connection of the load.

Claim 28. (New): The configurable controller of claim 26,

wherein a first configurable output control logic module and a second configurable output control logic module are connected respectively to one pair of high-side output driver and low-side output driver,

the one pair of high-side output driver and low-side output driver being connected to two sides of a load through two respective output pins of the configurable controller,

wherein the first configurable output control logic module and the second configurable output control logic module are configured to control the one pair of high-side output driver and low-side output driver by two independent signal sources.

Claim 29. (New): The configurable controller of claim 26,

wherein at least one of the plurality of configurable output control logic modules is connected to two high-side output drivers,

the two high-side output drivers being connected to one side of a load through respective output pins of the configurable controller,

wherein the plurality of configurable output control logic module is configured to simultaneously control the two high-side output drivers.

Claim 30. (New): A method of controlling a plurality of loads, comprising the steps of:

(a) providing a control logic;
(b) providing a plurality of configurable output control logic modules connected with the control logic; and
(c) providing a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side output drivers and low-side output drivers further being connected with a plurality of output pins of the configurable controller,

wherein each of the plurality of loads is connected to at least two of the output pins of the configurable controller and each of the output pins of the configurable controller is connected to a high-side output driver or a low-side output driver; and

the plurality of configurable output control modules are adapted to control each of the plurality of loads according to

a number of the output pins of the configurable controller connected to each of the plurality of loads,

a number of the high-side output drivers connected to the output pins of the configurable controller, and

a number of the low-side output drivers connected to the output pins of the configurable controller.

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Claim 31. (New): The method of claim 30,

wherein at least one of the plurality of configurable output control logic modules is connected to one pair of high-side output driver and low-side output driver, the one pair of high-side output driver and low-side output driver being connected to one side of a load through respective output pins of the configurable controller, wherein the plurality of configurable output control logic module is configured to drive only one of the one pair of high-side output driver and low-side output driver, depending on a second side connection of the load.

Claim 32. (New): The method of claim 30,

wherein a first configurable output control logic module and a second configurable output control logic module are connected respectively to one pair of high-side output driver and low-side output driver,

the one pair of high-side output driver and low-side output driver being connected to two sides of a load through two respective output pins of the configurable controller, wherein the first configurable output control logic module and the second configurable output control logic module are configured to control the one pair of high-side output driver and low-side output driver by two independent signal sources.

Claim 33. (New): The method of claim 30,

wherein at least one of the plurality of configurable output control logic modules is connected to two high-side output drivers,

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the two high-side output drivers being connected to one side of a load through respective output pins of the configurable controller,

wherein the plurality of configurable output control logic module is configured to simultaneously control the two high-side output drivers.